

### **REMARKS**

Applicants cancel claim 13, amend claims 7, 11, 14 and 16, and amend the specification to correct certain minor informalities. Accordingly, claims 2-12 and 14-20 remain pending in the application.

Reexamination and reconsideration of this patent application are respectfully requested in view of the following Remarks.

### **REQUEST FOR WITHDRAWAL OF FINALITY OF OFFICE ACTION**

The Office Action dated 18 November 2005 was designated as "Final." M.P.E.P. § 706.07(a) provides that an Office Action cannot be designated as "Final" if it includes any new grounds of rejection that were not necessitated by Applicants' amendment.

For the first time, this Office Action rejects claim 7 under 35 U.S.C. § 112, second paragraph. The Examiner states that the language of claim 7 that reads "having sides defined by a sidewall surface of the substrate" is indefinite. However, that language was not previously amended by Applicants, and indeed appeared in exactly that form in the originally filed claim 7, and has been present in exactly that same form throughout the prosecution of this application without ever being mentioned as a grounds of rejection until this "Final" Office Action. Very clearly, this is a new grounds of rejection not necessitated by any amendment of Applicants, as this exact rejection could have been made in any previous Office Action for this application.

Accordingly, Applicants respectfully submit that the Finality of the Office Action is improper, and respectfully request that it be withdrawn.

### **OBJECTIONS TO THE DRAWINGS**

Applicants hereby amend the specification to replace Fig. 1(a), Fig. 1(b), Fig. 1(c), and Fig. 1(d) with FIG. 1A, FIG. 1B, FIG. 1C, and FIG. 1D, respectively.

The objection that FIG. 3A should somehow be inverted is respectfully

traversed, as Applicants are unaware of any rule which specifies a particular angle or viewpoint from which an object must be shown. The Examiner cites 37 C.F.R. § 1.84(h), however Applicants respectfully submit that 37 C.F.R. § 1.84(h) simply states a preference that drawings be arranged when possible such that the sheet is viewed in an upright manner (i.e., with the long sides of the sheets at the left and right, and the short sides of the sheet at the top and bottom). Certainly nothing in 37 C.F.R. § 1.84(h) suggests that Applicants should not present bottom views of embodiments of their invention when such bottom views are the most helpful for understanding of the invention. So it is seen that the drawing is upright, but it depicts an object in a view one may or may consider inverted. In any event, 37 C.F.R. § 1.84(h) is *precatory* in nature, using the suggestive term “should,” rather than the mandatory term “must.” This rule for interpreting the CFR is very old and well established and should require no case law citation from Applicants.

Applicants respectfully traverse the objection to FIG. 4 that complains that FIG. 4 does not extend above 150 nm.

At the outset, there is no requirement that FIG. 4 plot any relationship for auxiliary pattern line widths above 150 nm. Indeed, the drawings would satisfy the requirements of 37 C.F.R. § 1.83(a) for claims 6 and 11 even if FIG. 4 was deleted in its entirety! That is, claims 6 and 11 include a feature pertaining to an auxiliary pattern, particularly, a line width of the auxiliary pattern. FIGs. 3A and 5C show the auxiliary pattern, including the line width of the auxiliary pattern, thereby satisfying the requirements of 37 C.F.R. § 1.84(b). Meanwhile, FIG. 4 does not show any auxiliary pattern at all, and therefore certainly cannot possibly illustrate a line width of an auxiliary pattern! Instead, FIG. 4 shows a graphical relationship between a line width of an auxiliary pattern and a line width of a photoresist pattern. Now if claims 6 and 11 recited such a relationship, and if they recited that relationship over a range where the auxiliary pattern line width that exceeded 150nm, then the Examiner’s objection *\*might\** have merit. But that is not what is claimed here. Meanwhile, the features that actually *are* recited in claims 6 and 11 are shown in FIGs. 3A and 5C.

Therefore, Applicants also respectfully traverse this objection to FIG. 4.

Furthermore, Applicants respectfully request that the Examiner refrain in the future from misrepresenting and mischaracterizing Applicants' Remarks in their responses to Office Actions in this case. Contrary to the Examiner's assertion, Applicants' did not "deny any relationship between the auxiliary pattern line widths of 30 nm to 200 nm on the phase edge shift mask (PEPSM) and the resulting photoresist pattern produced by the PEPSM in claims 6 and 11." Applicants merely denied that claims 6 and 11 **recite** any such relationship as a feature of the claim, requiring illustration by way of drawing. And Applicants respectfully traverse the statement in the Office Action that the combination of features recited in claims 7, 14, and 16, and claims 11, 6, and 20 respectively "recite" any relationship between the line width of the auxiliary pattern on the PEPSM and the corresponding line width of a photoresist pattern produced by the mask (which the Examiner seems to concede is indeed a patentable feature of claims 7, 14, and 16, rather than "an intended use.").

Accordingly, Applicants respectfully request that the objections to the drawings be withdrawn.

### **OBJECTIONS TO THE SPECIFICATION**

Applicants have amended pertinent portions of the specification as requested by the Examiner.

### **35 U.S.C. § 112**

The Office Action rejects claims 7-12 and 16-20 under 35 U.S.C. §112, first paragraph, as supposedly not complying with the written description requirement. In particular, the Office Action asserts that claim 7, lines 10-11 includes one embodiment not supported by the original specification, and that it represents "new matter." Similarly, the Office Action asserts that claim 16, line 6 includes one embodiment not supported by the original specification, and that it represents "new matter."

Applicants respectfully traverse those rejections for at least the following

reasons.

With respect to claims 7 and 16, Applicants respectfully submit that the originally-filed claim 7 recited:

“etching the layer of material to form auxiliary patterns therefrom on at least one of said top and bottom surfaces of said substrate”

Since these features were recited in the originally-filed claims on the filing date of the present application, they cannot possibly be “new matter!” Additionally, these features were described in the originally-filed specification at least at page 7, lines 2-4 and at paragraph [0120] at lines 1-3.

Nevertheless, to advance prosecution of this application and simplify the outstanding issues should an Appeal become necessary, Applicants hereby amend claims 7 and 16.

Therefore, Applicants respectfully submit that the written description requirement of 35 U.S.C. §112, first paragraph is fully satisfied with respect to claims 7 and 16.

Accordingly, for at least these reasons, Applicants respectfully request that the rejections of claims 7-12 and 16-20 under 35 U.S.C. §112, first paragraph be withdrawn.

Also, claims 2-12 and 14-20 are rejected under 35 U.S.C. § 112, second paragraph.

To advance prosecution of this application and simplify the outstanding issues should an Appeal become necessary, Applicants hereby amend claims 7, 11, 14 and 16.

As a result, Applicants respectfully submits that all of the Examiner’s issues have been addressed, with the exception of the statements in the Office Action to the effect that the “wherein when the mask is used to pattern a photoresist layer . . .” features recited in claims 7, 14 and 16 are “intended uses” of the claimed devices and

method and do not further limit the claims. Applicants respectfully traverse those statements for at least the following reasons.

At the outset, claims 14 and 16 do not recite “an intended use” of the claimed mask, but instead recite specific characteristics of the claimed mask. For example, claims 14 and 16 do not recite “wherein the mask is used to pattern a photoresist layer.” Instead, claims 14 and 16 each recite a specific characteristic of the mask under certain conditions (indeed one of the characteristics that distinguishes it from Ham’s mask). Namely, when the claimed mask “is used to pattern a photoresist layer” it has the characteristic that “a photoresist pattern is formed at an area corresponding to an edge of the trench, and is not formed at areas corresponding to the auxiliary pattern.” Such claim language is extremely common and well accepted in American patent law and is entitled to be accorded full patentable weight.

In similarity, in claim 7, the recited method produces a mask having the property than when the mask “is used to pattern a photoresist layer a photoresist pattern is formed at an area corresponding to an edge of the trench, and is not formed at areas corresponding to the auxiliary pattern.” Again, this is a specific property of the mask produced by the claimed method (and one of the properties that distinguishes it from a mask produced by Ham’s method).

Accordingly, for at least these reasons, Applicants respectfully request that the rejections of claims 2-12 and 14-20 under 35 U.S.C. §112, second paragraph be withdrawn.

### **35 USC § 102/103**

Applicants respectfully submit that all of the claims 2-12 and 14-20 are patentable over Ham U.S. patent 5,567,552 (“Ham”) alone, or in combination with Randall et al. U.S. patent application publication 2002/0094492 (“Randall”) for at least the following reasons.

Independent claims 7, 14 and 16 all include a feature wherein when the mask is used to pattern a photoresist layer, photoresist patterns are formed at areas

corresponding to edges of the trench, and are **not** formed at areas corresponding to the auxiliary pattern. Such a combination of features is described throughout the specification, for example in paragraphs [0075], [0090], [0095], and [0100], and shown in FIGs. 3A-B.

Applicants respectfully submit that neither Ham, Randall, nor any proper combination thereof includes such a feature.

The Office Action states that such a feature is “inherent” in Ham.

Applicants respectfully disagree. Indeed, FIG. 2 of Ham shows that not only is such a feature not “inherent,” it is clearly not present at all! The Examiner is respectfully invited to compare FIGs. 3A-B of the present application, showing an embodiment of the present invention, against FIG. 2 of Ham which clearly shows that when the mask is used to pattern a photoresist layer, photoresist patterns are formed at areas corresponding to edges of the trench, and are **ALSO** formed at areas corresponding to the auxiliary pattern 3 (see the bottom of FIG. 2 and also col. 2, lines 51-54).

Meanwhile, claims 2-6, 8-13, 15 and 17-20 all depend variously from claims 7, 14 and 16.

Accordingly, for at least the reasons above, the Applicants respectfully submit that claims 2-20 are all patentable over the cited prior art.

### **CONCLUSION**

For all of the foregoing reasons, Applicants respectfully submits that claims 2-12 and 14-20 are all patentable over the cited prior art. Therefore, Applicants respectfully request that claims 2-12 and 14-20 be allowed, and that the application be passed to issue. In the event there are any outstanding matters, the Examiner invited to contact the undersigned attorney at (571) 283.0740.


If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 50-0238 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. §

1.17, particularly extension of time fees.

Respectfully submitted,

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